

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
10 February 2005 (10.02.2005)

PCT

(10) International Publication Number  
**WO 2005/013329 A3**

(51) International Patent Classification<sup>7</sup>: **F28D 7/10**

(21) International Application Number:  
PCT/US2004/024148

(22) International Filing Date: 28 July 2004 (28.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/490,470 28 July 2003 (28.07.2003) US

(71) Applicant (for all designated States except US): ST.  
CLAIR SYSTEMS, INC. [US/US]; 12427 31 Mile Road,  
Romeo, MI 48095 (US).

(71) Applicant and

(72) Inventor: BONNER, Michael, R. [US/US]; 2320 Pleasant  
View Drive, Rochester Hills, MI 48306 (US).

(74) Agent: DUNN, Robert, A.; Dinnin & Dunn, P.C., Suite  
500, 2701 Cambridge Ct., Auburn Hills, MI 48326 (US).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

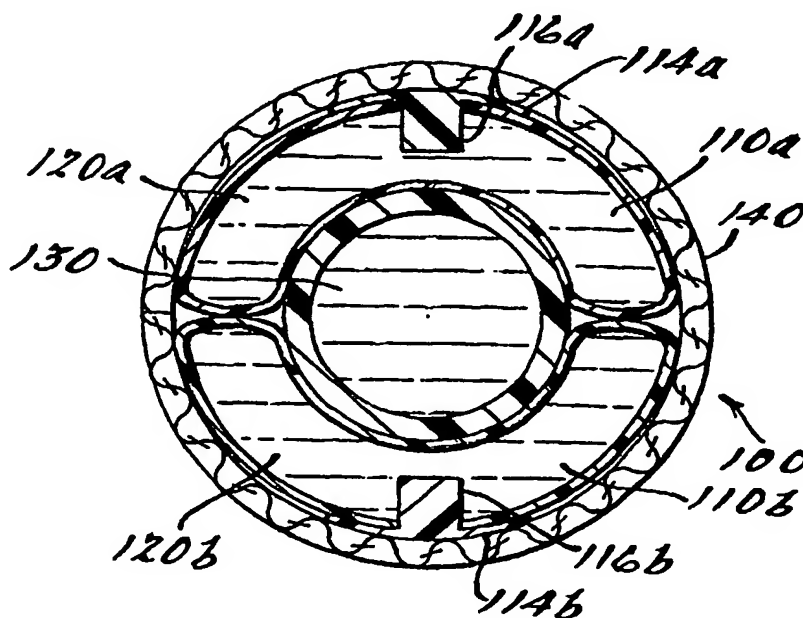
**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

(88) Date of publication of the international search report:  
2 June 2005

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: THERMAL INNER TUBE



(57) Abstract: An elongated structure (100) for the transmission of fluid-based compositions at non-ambient temperatures comprising a first conduit (130) for the transmission of a fluid-based composition, at least one flexible, elongated and inflatable temperature control conduit (110a, 110b) for the transmission of a temperature control fluid, the temperature control conduit (110a, 110b) having a relatively rigid elongated reinforcement member (116a, 116b); and elongated cover (140) holding said temperature control conduit (100a, 110b) in thermal communication with the first conduit (130).

WO 2005/013329 A3